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# Worldwide Report

ENVIRONMENTAL QUALITY

No. 314

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## INDIA

### BRIEFS

RIVER PROJECTS STUDIES--New De'hi, June 2 (UN)--The department of environment has undertaken a major project for the study of long-term environmental and ecological impacts of multipurpose river valley schemes in the Western Ghats of Kerala. A high-level source in the department claimed that this was a "very comprehensive project the like of which had never been undertaken anywhere in the world." The study, estimated to cost Rs. 75 lakhs, would cover three river valley projects--Idukki, Sabarigiri and to some extent the Silent Valley. It is to be completed in five years. The major component of the study is the Rs. 140-crore Idukki hydroelectric project which has the unique features of largest water storage capacity of two billion cubic metres in the country, biggest surge shaft tunnel through rocky hills and diversion of flow from one river basin to another. A note prepared by the department on the environmental impact of the Idukki project says the project poses a threat to the environment of the area. It has caused disturbance to the population, forest, wildlife and land use pattern. [Text] [Bombay THE TIMES OF INDIA in English 3 Jun 81 p 7]

CSO: 5000/7052

## LIMITED CONTROLS ON PHENOXY-BASED HERBICIDES

Kuala Lumpur BUSINESS TIMES in English 9 May 81 p 1

[Text]

PHENOXY-BASED weedkillers, known to have side-effects detrimental to human health, are widely manufactured and used in Malaysia.

While they have been subject to close scrutiny in the US and other developed countries, they are available off the shelf in Malaysia.

The most commonly used of these phenoxy herbicides — 2,4-D and 2,4,5-T — are also popularly known as "Agent Orange" which was widely used by the American armed forces to defoliate forests during the Vietnam War.

Technically they are called 2,4-dichlorophenoxy ethanoic acid and 2,4,5-trichlorophenoxy ethanoic acid.

In the US, 2,4,5-T can be used to clear only open range land, rice fields, and certain non-crop land. 2,4-D is not a registered pesticide in the US and the Environmental Protection Agency is still conducting tests on it.

In Malaysia, both are registered and approved chemicals under the 1974 Pesticides Act. They can be sold as long as they are suitably formulated, properly labelled and packed in proper containers.

According to the De-

partment of Agriculture, an approved pesticide is one which, in the opinion of the Pesticides Board, will be effective for the intended use and relatively safe to handle.

The casual attitude with which Malaysian farmers and plantation workers use 2,4-D and 2,4,5-T, or amine, as they call it, is in sharp contrast to the caution aroused, and in fact, required by policy-making bodies in the developed countries.

In Sweden, both 2,4-D and 2,4,5-T are banned. In Norway, Italy and the Netherlands, 2,4,5-T has either been banned or allowed to be used only for restricted purposes.

But farmers and other agricultural workers in Malaysia handle these chemicals throughout the year. The farmers spray padi fields with 2,4-D to kill off weeds after the transplanting of padi seedlings. Estate workers circle-spray the ground around trees to control lallang.

They are unaware of the dangers inherent in using sophisticated chemicals. Ignorance both of proper methods of applying chemicals and the danger of mishandling them can lead to fatalities.

Pesticides were in-

tensely applied in Kedah last year to control an outbreak of brownhoppers. Four farmers from the pesticide-sprayed area died shortly afterwards.

Despite reports all over the world indicating that phenoxy herbicides may lead to congenital defects, the officials from the Agricultural Department argue that there is no concrete evidence that 2,4-D and 2,4,5-T are really the culprits.

But an official from the Crop Protection Department acknowledged 2,4,5-T was a controversial chemical and said: "The Pesticide Board is keeping a close watch on developments and will not hesitate to take the necessary action when the need arises."

An article in the medical journal, the Lancet, June 23, 1979, claims that the herbicide 2,4,5-T had a harmful effect on the reproductive process in animals under experimental conditions.

A later article in the Lancet, July 26, 1980, relates that experiments with 2,4,5-T produced congenital deformation in animals. But researchers concluded that subsequent animal experiments gave conflicting results.

The only safety

guidelines that Malaysian users of 2,4-D and 2,4,5-T have is the 1974 Pesticides Act that has been force since April 1, 1980.

Under this Act, it is an offence to pack pesticides in unsuitable containers with unapproved labels. From Jan. 1, 1982, all pesticides and herbicides like 2,4-D and 2,4,5-T can only be sold if they have labels approved by the Pesticides Board. Labels must state active ingredient content, carry a hazard warning, define poisoning symptoms and the treatment in case these appear, and recommend precautionary measures.

While most of the big manufacturers already satisfy the labelling and packaging requirements as detailed under the Pesticides Act, the instructions do not seem to be having the desired effect on users.

Recognising this problem, a leading manufacturer of agricultural chemicals has taken the initiative of conducting field campaigns to educate farmers on the proper use of agricultural chemicals.

This compares to the reticent and negative attitude adopted by most of the other agricultural chemical producers.



## EAST ASIAN SEAS PLAN TO ASSESS ENVIRONMENTAL DEGRADATION

Kuala Lumpur BUSINESS TIMES in English 12 May 81 p 6

[Article by Adlai Amor in Manila]

[Text]

EAST Asian seas comprise only 2.5 per cent of the total surface area of the world's ocean, but they are one of the busiest waterways.

Hundreds of ships loaded with various products pass through East Asian seas daily, acting as a crucial funnel for trade between the rich and poor countries of the world.

However, sea collisions, resulting in massive oil spills, and other forms of environmental pollution have earned it the name as a "dirty international backwater lane."

No one really knows the extent of the damage wrought by pollution on these vital waterways, but it has motivated leaders of Asean to initiate a massive clean-up of the waters surrounding the region.

Last April 29, they adopted a plan aimed at protecting and developing the marine environment and coastal areas of East Asia. The agreement, which culminated more than two years of discussions in the Asean, is the first such plan to protect East Asian seas.

The agreement was hailed by United Nations Environment Programme (UNEP) executive director Mostafa K. Tolba as the "beginning of a new era of cooperation among the states of the region to develop their common marine area in an environmentally-sound manner."

The East Asian seas technically belong to the Pacific Ocean, with the exception of the Andaman Sea which belongs to the Indian Ocean. The other East Asian seas are: the Strait of Malacca, China Sea, Java Sea, Flores Sea, Banda Sea, Arafura Sea, Timor Sea, Celebes Sea, Sulu Sea and the Philippines Sea.

Together, they comprise an area of 9.84 million square kilometres which represent 2.5 per cent of the surface of all oceans. The East Asian seas virtually touch the shores of the five Asean countries, Burma, Brunei, the Andaman Islands, Kampuchea, Vietnam, China, Taiwan, Japan and Korea.

The East Asian Seas Plan calls for an assessment of the effects of man's activities — such as the degradation of coral reefs and mangroves — on the marine environment. It also calls for the creation of a regional data exchange system on marine environment.

Existing data on coral reefs in the region indicate that most of the reefs are in poor shape. In the Philippines, where most of the region's coral studies are being conducted, about 40 per cent of the country's coral reefs are considered poor while only five per cent are in excellent condition.

Most of the coral reef

destruction in the region is caused by siltation, destructive methods of fishing and using corals as building materials. As a result, many of the coastal waters of the region are being eroded by the sea and the catches of subsistence fishermen are declining.

In the past, very little attention has been focussed on the region's mangrove forests which occupy about five million hectares. These forests are regularly exploited for their timber or converted into fishponds as in the Philippines.

Scientists, however, say that mangrove forests are among the most important ecosystems in the world since they serve as a breeding ground for fish, shrimps and other marine life.

The East Asian Seas Plan states that socio-economic development in the region can best be achieved on a sustainable basis if environmental considerations are taken into account. Special attention will be given to managing domestic industrial and agricultural wastes which are often discharged into coastal waters without treatment.

On oil pollution control, the plan calls for the development of a comprehensive training programme on the prevention and combating of oil spills. Joint investigations aimed at curbing

operational pollution from ships are also being proposed.

East Asian waters are constantly pilled by shipping of all kinds. The Straits of Malacca and Singapore, for example, have the highest number of tankers passing daily than any other comparable stretch of water.

In recent years, there have been numerous collisions in the area, resulting in oil spillages of massive proportions. For example, the Showa Maru spilled about 5,000 tons of crude when it ran aground in the Malacca Strait in 1975, causing millions of dollars in damages on the environment.

Concern has also been voiced out by environmentalists that increased offshore exploration for petroleum may even pose a greater marine pollution risk in East Asia. They do not discount the possibility of oil well blowouts, like that which occurred in the Gulf of Campeche, Mexico in 1979.

After preparatory surveys by the UNEP this year, the Asean countries will take over the responsibility for implementing the various activities outlined in the agreement.

In 1983, the plan will be reviewed and further funding measures will be explored. By then, Asean officials hope other East Asian countries will join them in their efforts to protect the region's seas.

— Depthnews Asia

SCIENTIST RECOMMENDS REDUCED USE OF PESTICIDES

Bratislava SMENA in Slovak 25 May 81 p 3

[Interview with Eng Alexander Huba, CSc, director of the Institute for Experimental Phytopathology and Entomology of the SAV (Slovak Academy of Sciences) Center of Biological and Ecological Sciences: "Nature Does Not Make Mistakes"; date and place not given]

[Text] In May, when crops are coming up and fields begin to green, farmers are not viewing their future harvest with pleasure only because young cultures, like childrens can be a cause for worry. They must be protected from diseases and harmful agents. "Medicating" plants is becoming an increasingly complex science encompassing more than just a search for means to control pests and diseases. It requires an understanding of the laws governing the balance of all factors at work in nature and the rules regulating them.

"Nature does not make mistakes," asserts Docent Eng Alexander Huba, CSc, director of the Institute of Experimental Phytopathology and Entomology of the SAV Center for Biological and Ecological Sciences who on 1 May was awarded the Order of Labor for his achievements and who, with two of his colleagues, became a laureate of the Klement Gottwald State Prize.

[Question] Until recently, chemical "treatment" of crops was regarded as a miracle which would keep pests and diseases away from fields and orchards. Today we know better. Warning signals have appeared cautioning against contaminating nature with chemicals. What danger does chemistry present to fields and orchards?

[Answer] While conventional chemical methods are being justifiably criticized, new methods without harmful effects on the environment have not yet been fully developed. The consumption of pesticides is still rising from one year to the next and their residues in the soil and in plant tissues are endangering the stability of ecosystems, food safety and the integrity of the environment. Before World War II, field crops were almost never treated with pesticides. In 1970, in the CSSR 3.6 million hectares were treated chemically; in 1975, this figure rose to 6.6 million hectares with 4,203 tons of pesticides applied. All these substances, including chemical fertilizers, participating in the metabolism of other living organisms are difficult to control because of various transformations they are subject to which also change their degree of toxicity. Some of these metabolites are carcinogenic or are being converted to carcinogenic substances which are then ingested by humans with plant food and the meat of livestock.



[Question] Therefore, other methods of protecting crops will have to be applied of necessity. What new direction will pest and disease control take?

[Answer] The need to stop quickly the uncontrolled contamination of the environment is indeed urgent. Every possible effort should be made to reduce the need to use toxic pesticides. This will become possible as soon as we learn to imitate the regulatory processes ongoing constantly in nature. We are currently engaged in defining more precisely the concepts of plant disease and plant health and the impact and mission of harmful agents in nature. The problems can be solved at various biological levels from the molecular and cellular to the societal. The biology of macrosystems should be accorded its rightful place because it illuminates the interrelationship of all factors at work.

[Question] The new plant protection method is thus based on progress yet to be achieved in biological sciences. To that end what priorities should research pursue in this field?

[Answer] Integrated protection methods based on a strategy designed to correct the number of harmful factors by processes similar to those used by nature. This kind of protection is based on the assumption that harmful factors are also functional components of ecosystems because in reality they fulfill the natural function of regulatory mechanisms. We feel intuitively that in this realm many new forces are at work or believed to be at work but lack the proof of their existence. Of interest is the question: What signal informs individuals of a species that they multiply excessively. It appears that the signal has the characteristic of a metabolite. Research has demonstrated that the social behavior of animals or insects which have multiplied excessively differs from that of individuals of a species multiplying normally. This change in behavior is designed to prevent continued overproliferation with the surviving strong individuals representing the founders of a new generation. This is nature's way of regulating the numbers of plant and animal species. Viewed from this perspective, diseases do not constitute "errors" of nature but a method of maintaining various species in balanced population ratios. Therefore, in this area, scientists must focus primarily on the methods which nature uses and apply them on crops to control pests. Some natural phenomena which we now consider to be malfunctions will soon be proven to be highly functional. Today there is much talk about stress biology. The finding is that stress which is not overly intensive forces the organism to improve its performance and activate its life. But excessive stress is intolerable because of the amount of energy required to overcome it, and therefore destabilizing, resulting in the destruction of the entire system. It appears that findings about human and animal stress reactions will be applicable with certain corrections to plant life, and harmful agents affecting crops.

[Question] From time to time some new information appears describing anomalous behavior of animals.

[Answer] A poignant example was the recent report on the excessive proliferation of hamsters in East Slovakia and their rising population density. As a result, the animals were becoming increasingly disoriented. For example, they began building burrows in untypical places such as piles of straw and were coming into the open in freezing weather licking themselves until they died. They became aggressive to the point of devouring their own weaker burrow mates whose bones they then threw out. At times they even attacked people. Upon meeting a human being they jumped knee-high

and bit. Such aggressive behavior appeared to be functional, aimed at reducing population density. Other examples--northern rodents, voles, throw themselves into the sea whenever their population density exceeds the norm. The reverse behavior can be observed in whales: they beach themselves. Fish crowded in pools lose resistance to pathogenic organisms and parasites. Researchers found that a pheromone-like metabolite dispersed in the water was responsible for this phenomenon. When this metabolite was chemically decomposed, the fish tolerated even greater overcrowding without adverse health effects.

[Question] Are plants subject to these effects?

[Answer] Symptoms similar to the above were also noted in the case of plants, especially under large-scale production conditions. Densely sown cereal monocultures frequently grown in succession become highly susceptible to infestation with fungi which normally used to infest only dead plants. Fir monocultures become dangerously infested with the common *typyly*-moth while fir trees in mixed stands are resistant to this pest.

[Question] It would appear, then, that if biologists knew how to induce in plant pests "the feeling" of excessive proliferation artificially, the result would be self-destruction by the pests.

[Answer] Pheromones are the chemical agents communicating information to individuals of a species. Today these substances are already being synthesized in the laboratory and used for targeted pest control. It is my belief that research findings illuminating the function of these substances would markedly raise pest-control effectiveness and at the same time prevent the contamination of the environment with pesticides. In short, the point is to replace the strategy of using chemicals as preventives with the control strategy nature uses.

Nature does not err and everything natural has its place and purpose. It is highly economical, preserves only the essential and is admirable in dealing with problems. It is man's best teacher. While in this century it would appear that we know enough already much still remains to be learned: anything we might look at is an object of study, research and application, including the greening field in May.

8664

CSO: 5000/3018

## COSTA RICA

### CHEMICAL STUDY OF PACIFIC COAST OCEAN WATERS

San Jose LA REPUBLICA in Spanish 11 Jun 81 p 12

[Text] Owing to the interest that has been shown over the past several years in the exploitation of ocean resources, the Chemistry Department of the Universidad Nacional is developing a program in the oceanics area which aims to analyze chemically the nation's coastal waters and report on the prevailing conditions in these areas.

The first such study is being carried out along the coasts of the Gulf of Nicoya, with the object of characterizing the chemical content of its waters, providing a basis for future studies in the field of oceanic sciences, and creating a source of reference for ecological studies because of the growing industrialization and urbanization of the coastal zones.

Heading up this study are Drs Juan Valdez Benizales, Moises Mendelwicz Golwalcq and Efraim Solis, all of the Chemistry Department of the Universidad Nacional.

#### Description of the Area Under Study

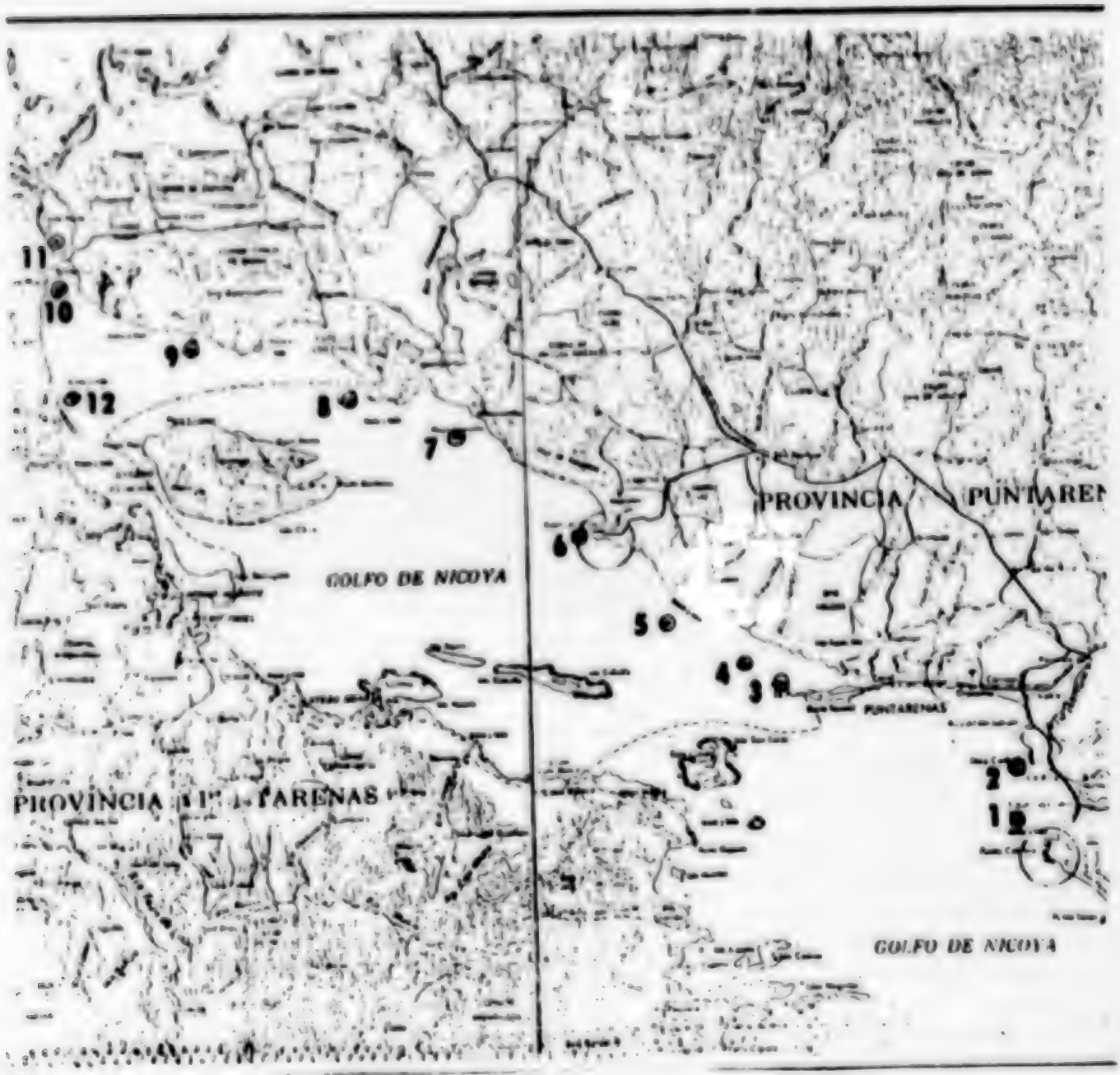
The Gulf of Nicoya may be considered an estuarine system. It is situated on Costa Rica's Pacific coast at 10° N latitude by 85° W longitude.

It is 52 miles long and penetrates deeply inland, first northward then northwestward. It is 34 miles wide at its mouth, narrowing down to 5.5 miles wide at Puntarenas, then widening out again to an average of 8 miles.

Starting at shallow depths of 2-5 fathoms, the Gulf deepens gradually southwards to 10-100 fathoms.

Almost the entire interior coast line of the gulf, north of Puntarenas, is broken up by shallow, winding mangrove swamps.

The principal fresh-water waterways emptying into the Gulf are: Rio Tempisque at the head of the Gulf, Rio Barranca and Rio Grande in Costa Oriente southeast of Puntarenas. There are also a number of smaller waterways and streams that empty into it.



[For key, see text opposite page]

To carry out this study, the following 12 station points [keyed to map on facing page] were selected in the Gulf of Nicoya:

- |                          |                                    |
|--------------------------|------------------------------------|
| 1. Punta Caldera.        | 7. Manzanillo.                     |
| 2. Boca Carballo.        | 8. Punta Piedra.                   |
| 3. Opposite Puntarenas.  | 9. Cerro Gordo.                    |
| 4. Hacienda Puerto Alto. | 10. Entrance to Rio Tempisque.     |
| 5. Chomes.               | 11. Upstream in Rio Tempisque.     |
| 6. Punta Morales.        | 12. Entrance to Rio Estero Letras. |

#### Samplings and Methods

Sampling was begun in March 1979 and continues twice monthly. The water samples are taken 2 km from the coast and at two different depths, in a 1-liter bottle equipped with a thermometer. The samples are analyzed for: dissolved oxygen, biochemical oxygen demand, chemical oxygen demand, reactive phosphorus, total phosphorus, ammonia, nitrites, alkalinity, pH, temperature, salinity and transparency of the water.

#### Observations

##### Salinity

The distribution of salinity over the surface waters of the sea depends upon the latitude, season of the year, currents, and, in deep waters, on the circulation processes. The processes most affecting it are: evaporation, precipitation, currents and the mixing processes.

In the Gulf of Nicoya, the salinity is affected by the influx of fresh water from Rio Tempisque at the head of the Gulf, together with the water brought in by various minor rivers and by precipitation falling directly over the surface of the Gulf. Current salinity values found ranged from 10 to 35 parts per million [ppm].

##### Temperature

The surface temperature distribution depends upon the latitude, season of the year, currents and, in deep waters, upon the circulation processes.

The processes directly affecting the temperature distribution are: heating, cooling, currents and mixing processes.

Daytime open-sea surface temperature variations are small (rarely more than  $0.3^{\circ}\text{C}$ ); surface temperature variations in coastal waters can be greater (2 to  $3^{\circ}\text{C}$ ).

Temperature variations at the stations selected in the Gulf of Nicoya ranged between  $27^{\circ}\text{C}$  and  $30^{\circ}\text{C}$ .



### Dissolved Oxygen

The dissolved oxygen content in sea water is very important for the life of marine organisms, and depends upon the processes of photosynthesis and respiration of the latter, the oxidation of organic and inorganic substances, and the circulation and mixing processes.

The oxygen levels found at the different stations in the Gulf are within acceptable limits, levels of 4 to 8 mg OL-1 (mg of oxygen per liter) having been found at some of them.

### Phosphates

Phosphorus is one of the most important biogenic elements; it forms part of the composition of phytoplankton proteinaceous substances and intervenes in the vital processes such as respiration, photosynthesis and metabolism. It is found in water in the form of inorganic and organic compounds in dissolved state or in suspension.

Values normally encountered in sea surface waters range from 0 to 108.5 mg P-PO<sub>4</sub>L-1 (mg of phosphatic phosphorus per liter), the higher concentrations being found in coastal zones. At the stations studied, phosphorus levels ranged between 7 and 105 mg P-PO<sub>4</sub>L-1.

### Nitrite and Ammonia

Nitrogen is one of the basic elements of living cells; it is an essential part of amino acids. It is found in them in the form of organic and inorganic compounds (ammonia, nitrites and nitrates) as well as in molecular form.

Nitrogen, especially in its inorganic form, is consumed in the photosynthesis processes, and in the synthesis of organic substances. It is also consumed in denitrification processes.

In the various stations of the Gulf of Nicoya, the levels of nitritic and ammonia nitrogen are within normal limits.

### pH

The pH of the Gulf waters was found to be between 7.9 and 8.3.

The Gulf of Nicoya waters in the area under study may be considered uncontaminated waters, in that the value of each of the parameters studied rarely exceeded the water quality criteria levels.

These waters are clear except for those in the vicinity of the Tempisque, which during the season of torrential rains show a transparency of 0.5 m.



#### Acknowledgements

The sampling trips were made aboard patrol boats of the Ministry of Public Security, whose cooperation and that of the personnel of the Naval Base was most important to the carrying out of this project. Two industrialists of the Puntarena District, Dr. Pedro Vieta and licenciado Buenaventura Lazo, also cooperated.

9238

CSG: 5000/2137

RENEWABLE RESOURCES CONSERVATION PLAN

San Salvador LA PRENSA GRAFICA in Spanish 4 Jun 81 pp 6, 11

[Article by agronomist Carlos Enrique Bonilla]

[Text] The Ministry of Agriculture and Livestock (MAG) has drawn up a plan of action on renewable natural resources, as part of the goals of the 1981-1983 1-year agricultural and livestock plan. It is to be implemented on a national level.

El Salvador's renewable natural resources situation will continue to be a matter of foremost interest; MAG officials have, to a greater or lesser extent, devoted attention to these resources, and, now that a professional, part of whose career has been dedicated to research and to the warding off as much as possible of the destruction of these resources, is at the head of the MAG, the situation will receive even more attention.

The loss of these natural riches--the deforestation; the extinction of many species, plants, birds and animals; the erosion and other environmental problems that affect the future of the nation in terms of the conservation of its renewable natural resources--can no longer be permitted!

A forestry and conservation program is vital. "All the active forces in the nation's communities" must be brought to bear on forestry planting and protective activities--a task that must be permanent and all-inclusive.

The MAG is in fact embarking on the implementation of a wide-ranging program: dynamic and coordinated projects of reforestation, conservation and rational use of renewable resources--or at least of those few remaining to us...!

"A trip through the interior of the country, especially during the dry season, provides convincing proof of the deterioration: vast expanses have been felled and burned and are suffering the effects of what in other countries has been called 'the cancer of erosion.'"

The MAG's current work covers the following:

--The reforestation planting of 2,500 hectares, with emphasis on the reformed sector; seven additional projects approved for estates by the Office of Special Resources.

92JR

CSO: 500/2117

## GUINEA-BISSAU

### DETAILS OF UN ASSISTANCE IN ANTI-DESERTIFICATION PROGRAM

Bissau NO PINTCHA in Portuguese 2 May 81 p 8

[Text] While it was in our country last week, the mission from the UNSO (United Nations Office for Coordination of Programs to Combat Drought and Desertification) met with the ministers of rural development, natural resources and economic coordination and planning to study documents on rural development and the desertification situation.

The mission determined that there was an egregious shortage of cadres, which makes prompt execution of certain projects difficult. In fact, the mission proposed accelerated training of higher-level cadres abroad, while UNSO will participate in creating a center in this country for diversified training of rural development agents, principally in the Bafata region.

The UN agency will reinforce the various national technical services that will participate directly in the struggle against desertification, specifically the forest services (with the creation of brigades in the four rural development zones) and the hydraulic, climatological and meteorological services.

At the same time, the UNSO will spend \$2 million on programs for the protection of the country's vegetation resources, namely, pasturelands for the development of livestock raising. According to the findings of the mission, Guinea-Bissau has enormous potential for cattle farming.

UNSO is also planning a project for forest and livestock protection in Zone 2 (Bafata and Gabu), which will include combating fires and planting forage trees, at a cost of \$1.6 million; it will spend \$800,000 to help alleviate the shortage of water for various purposes. In agriculture, the organization will promote vegetable and fruit experimentation and propagation in Zone 2, to aid in agricultural diversification and to meet the food needs of the population. As the leader of the mission observed, production might even reach levels that would permit exports.

There is another idea for a project to serve the development of agriculture in Guinea-Bissau creation of a center for domestic production of farm equipment (moldboards, plows, carts, scythes), to avoid imports of such implements. Another purpose of the center would be to promote rural handcraft.

Before the programs are initiated, UNSO will present a document containing the studies that were conducted to our government for evaluation and approval, after which the organization will begin a campaign to inform and mobilize sources of financing at the international level to adopt projects according to the priorities defined by Guinea-Bissau.

#### Why Desertification?

In the case of Guinea-Bissau, a country of the Sudanese-Saharan regions, it is not a matter of desertification in terms of sand dunes. It is a vicious and contradictory phenomenon in which various factors are combined, which can be subdivided into natural occurrences and human actions.

Given the threatening advance of the Sahara on the north and east, the salinization of the soil in the coastal regions with the flooding of pastures by salt water, the disappearance of vegetation because of irregular rainfall and the destructive action of fires set by hunters and farmers, the lack of systematic reforestation and other factors contributing to the deterioration of the country's ecosystem, UNSO experts can conclude that "Guinea-Bissau is seriously threatened with desertification."

6362

CSO: 5000/5022

## OUTLAWING OF DDT SEEN POSSIBLE

## Investigation Underway

Salisbury THE HERALD in English 20 Jun 81 pp 1, 3, 6

[Text] **THE controversial pesticide DDT may be banned in Zimbabwe depending on the results of an investigation by the Ministry of Health.**

A spokesman for the Ministry said in Salisbury yesterday that the use of DDT was being investigated by the Ministry's hazardous substances control section.

"We have formed a committee of experts from various fields to discuss the use of DDT, whether or not we should continue using it or phase it out and eventually ban it altogether," said the spokesman.

The committee had already begun its investigation and would meet again in August after which, he said, the Minister of Health might make a statement on the issue.

DDT has long been the subject of much controversy in Zimbabwe.

Supporters claim DDT is not really harmful to human, bird and animal life and cite the pesticide's comparative cheapness as a telling argument for its continued use.

Opponents claim it is a health hazard and argue that its relative cheapness is of little importance when considered

against the risk to health.

The spokesman said the DDT controversy "has done a lot in stimulating the re-classification of other substances".

He was referring to several Government notices which spell out regulations governing the use, labelling, packaging and storage of three groups of substances and articles declared to be hazardous.

The regulations, either amendments to existing provisions or new orders,

were gazetted yesterday and will come into effect in October or January next year depending on the classification.

Group one covers substances that are highly toxic and require special licences for their sale, use or supply, such as lindrin and chlordane.

Group two is for substances that are not so highly toxic such as DDT and whose sale and supply the Ministry of Health would like to regulate.

The third group is for those substances considered mildly toxic such as household pesticides.

The groups, particularly the third, include substances that were previously not classified.



## Experts on Both Sides

Salisbury THE HERALD in English 20 Jul 81 p 3

[Editorial: "Probing DDT"]

[Text] **DEVELOPING** countries throughout the world, anxious to catch up with their "bigger brothers" in the developed world, have quite often been unable to surmount a dilemma that has been peculiar to them for some time now.

It is this: in trying to speed up their development, should they or should they not take measures to protect both their human and natural resources?

For Zimbabwe, the controversy over the use of DDT has been raging for some time. On the one hand, we have experts who believe that this pesticide, banned in the United States and the United Kingdom, poses a real danger to human and animal life wherever it is used.

On the other, we have other experts who with equal vehemence maintain that the pesticide is not as harmful as it has been alleged to be.

The Government is right to appoint a committee to probe the whole question of DDT once and for all. While most people would not argue about its effectiveness against malaria-carrying mosquitoes, others would just as strenuously hold that if human lives are being endangered through the use of the pesticide, then there is a strong case for banning it.

## Phasing Out Urged

Salisbury THE HERALD in English 24 Jun 81 p 9

[Text] **AGRICULTURAL** use of DDT can be phased out, even on cotton, says a spokesman for the newly formed Crop Protection Group of the Crop Science Society of Zimbabwe.

"The replacement of DDT is not, however, as simple as it appears. Even when it is replaced it must not be banned, but held in reserve," he said.

DDT was used on maize against stalkborers and mouthbrethes. Recent work by the Department of Research and Specialist Services had shown that a loss in yield of 350kg ha resulted from an 8 per-

cent infestation of stalkborers.

"That is a loss worth \$42 at the present maize price, compared with an insecticide cost of about \$2 a ha," commented the spokesman. "So even though some alternatives to DDT are more expensive they are still economic."

The use of DDT on cotton is less easily phased out, but Zimbabwean growers are attuned to an integrated approach to pest control already

"They do not apply pesticides regardless, as in some countries, but only when scouting shows a build-up. They tolerate a certain level of pests. This enables natural predators of pests to survive."

Specific pesticides which kill particular pests are preferable to wide-spectrum chemicals such as DDT. Cotton breeding programmes aim at building resistance to pests into the plant as an alternative to pesticides.

## MERITS, EFFECTS OF HYDROELECTRIC SCHEMES EXAMINED

Salisbury THE SUNDAY MAIL in English 21 Jun 81 pp 6-7

[Article by Raaul du Toit]

[Text] A MAJOR study is being carried out to assess the likely environmental effects of new hydro-electric schemes that might be built on the Zambezi River.

This study has been initiated by the Natural Resources Board and is being funded by the Zimbabwean Government.

The Department of Land Management at the University of Zimbabwe has been given the task of co-ordinating the investigation, which will involve experts in many fields.

At present, Zimbabwe consumes about 7 000 million kilowatt-hours of electricity annually, of which 30 percent is imported at an estimated cost of \$20 million a year.

Recent forecasts indicate that our electricity consumption will increase by eight to 10 percent each year, which means that we have to expand our power-generating capacity.

A survey of Zimbabwe's energy situation, including an appraisal of the most feasible energy sources to meet our future needs, is being carried out by a group of international engineering and economic consultants.

These consultants will submit their report to the

Government at the end of the year. Also required at that time will be an environmental impact study.

Basically, the energy options being considered are thermal stations, hydro-electric schemes and the importation of power from Cabora Bassa.

Looking first at the possibility of power from Cabora Bassa, some obvious aspects that would have to be studied are Mozambique's obligations to South Africa and the type of electricity that would be available.

The present situation is that Cabora Bassa is linked to South Africa by a high-voltage direct current line which is suited to long-distance, point-to-point transmission.

Guerilla activity in Mozambique has disrupted transmission to the extent that South Africa can no longer rely on Cabora Bassa's electricity supply.

It would not cost Zimbabwe a great deal to build a new line to Cabora Bassa, but our national grid is alternating current and so the power from the scheme would have to be tapped before it is converted to direct current. Or, alternatively, costly equipment would be needed to convert the direct current back to alternating current.

Another problem is that

many people think it wouldn't be wise for us to have a major source of our electricity outside the country for strategic reasons.

However, this shouldn't be seen as a stumbling block — the recent history of Central Africa has proved that electricity flows across borders even when they are supposedly closed and as development proceeds the transmission network between nations is going to become more and more intricate. Ultimately much of Southern Africa's power might come from hydro-electric schemes on the Congo River in Zaire.

The expansion of the coal-fired thermal power station at Wankie is another strong possibility as our next major step in electricity generation.

## SENSIBALE

Wankie Stage II would give the country an additional capacity of 800 megawatts at a cost of between \$600 and \$700 million. Kariba's capacity is about 1 200 megawatts.

Thermal plants at Wankie would be a sensible proposition from the point of view of making the best use of our coal resources, since low-grade coal could be burnt to provide electricity. At present vast quantities of low grade coal are stripped off the underlying higher grades and are pushed aside to combust spontaneously.

Thermal power may also be feasible at other coalfields such as that at Sengwa. Obviously the pollution hazards associated with thermal schemes would need careful consideration.

Another possible problem is that although thermal stations would provide more employment than hydro-schemes, they would require skilled labour of which there might be a serious shortage in this sphere in years to come.

Finally, hydro-electric schemes are being considered. The Kariba South Bank plant will almost certainly be expanded to provide an additional capacity of 300 megawatts. There are several sites along the Zambezi being considered for new schemes: Mupata Gorge, Devil's Gorge, Batoka Gorge and the Victoria Falls.

The Mupata Gorge and Batoka Gorge schemes are being investigated in detail.

Mupata dam would be sited about 30 km upstream of the Mozambique border and the Batoka dam would be built in the winding gorge below the Victoria Falls.

## DESIGNS

Provisional designs for the dams have been completed and preliminary drilling will begin shortly in order to investigate the rock structure at each site. Both dams would be of the double curvature arch type, similar to Kariba, but the major differences would exist between the two schemes in other respects.

● The dam at Mupata would be 67 m high, whereas the dam at Batoka would be 177 m — Kariba is only 125 m. Batoka's massive wall would take a couple of years longer to complete than the one at Mupata. The cost of both schemes would be comparable with that of Wankie Stage II.

● The Mupata scheme would flood an area of about 1 230 km<sup>2</sup> of which 54 percent would be in

Zimbabwe and 46 percent in Zambia. This lake would be about 300 km long and 1 km across at its widest point.

● The Batoka dam would create a very narrow lake confined within the walls of the gorge, flooding an area of only 25 km<sup>2</sup>. Lake Batoka would wind about 50 km upstream to the Third Gorge below the Victoria Falls and would be less than a kilometre wide in most places.

● The Batoka scheme would generate at peak capacity during the period when the Zambezi flows strongly and the rate of power generated would decrease as the river's level subsided.

The important feature of this scheme is that the water would drop a great height at the dam so that a large amount of electricity could be generated per unit volume.

Generation at Batoka would have to be co-ordinated with Kariba's generation and as the river's flow decreased more power would have to be generated at Kariba to compensate for the declining power production at Batoka.

## ISOLATED

The planned expansion of the Kariba South Bank plant is therefore desirable before the Batoka scheme is built.

On the other hand, the Mupata scheme would depend more on the steady throughflow of a large quantity of water throughout the year. This greater flow of water would be required due to the lower drop at the wall.

The inflow into Lake Mupata would be regulated by the Kariba scheme as well as the hydro-electric scheme on the Kafue in Zambia.

This means that the level of Lake Mupata would not vary much, so that a constant flow of water past the turbines would be maintained and with the fairly constant fall of water, the rate of electricity generation would be fairly even throughout the year.

The installed power-generating capacity of each scheme would be much the same — in the region of 1 000 megawatts.

Much concern has been expressed about the inevitable loss of the floodplain area around Mana Pools if the Mupata Gorge scheme goes ahead.

The effects of this inundation on the game population in this part of the Zambezi Valley would certainly be severe.

To assess these effects objectively one should look beyond the construction of the dam wall portance. In fact it is possible.

One should consider the likely adjustment that might take place within the animal communities when the ecology begins to settle down after the initial disturbances.

One should also consider whether all these natural adjustments are going to be allowed to take place or will the scheme merely be the start of further human interference through mining, irrigation, recreation and so on.

On the basis of observations at Kariba and Cahora Bassa, ecologists will be able to make some reasonable predictions on the ways in which the environment might heal itself. For instance, we might guess that a lush, grassy shoreline will eventually develop as at Kariba, which could support a large number of grazing species although of limited variety.

When it comes to the question of further local economic development that might be associated with the new lake, our guesses will be rather vague since there are so many factors involved here.

The Batoka scheme has received little publicity due to the fact that it would upset hardly any animals short from a few baboons and some cliff-dwelling birds, more so is not so much the ecological effects as the associated economic development that would be of im-



should be possible. The effort will not be wasted since the World Bank would require such a report before either of the schemes could be funded.

Even if both schemes eventually go ahead the environmental analysis will assist planners in minimising the adverse effects.

The Zambians have shown growing concern over the schemes, particularly since they have recently established a new game reserve on their side of the river, opposite Mana Pools. They endorse the need for an environmental study before a final decision is taken.

### **SOCIAL VALUES**

It should be pointed out that although we will try to cover some of the cultural and aesthetic aspects of the Zumbwa project, our report will really be seen as a technical document to be considered in conjunction with the engineering and economic consultants' reports.

The real issue confronting our decision-makers is an ethical one: What is the social value of our unique patches of African real estate? Should we sacrifice them in an attempt to meet the demands of our expanding population or should we try to keep them as long as possible as part of the cultural heritage of unborn Zimbabweans?

CSO: 5000/5027



## DISCHARGE FROM PAPER MILL BLAMED FOR HUGE FISH KILL

Helsinki HELSINGIN SANOMAT in Finnish 8 Jun 81 p 12

[Article: "Dead Fish Fill Calm Waters; Poison Pollutes Kymijoki from Kuusankoski to Myllykoski"]

[Text] Kotka (HS)—Expressions on faces other than those of local fishermen also turned serious along the Kymijoki on Saturday. Thousands of dead fish were floating in the river: dace with their white bellies up or huge ide with bloody gills, the quiet waters a mass of white lifeless creatures. People who have lived along the banks of the Kymijoki for over 80 years do not remember a fish massacre like this one.

During the morning hours of Pentecost Saturday, everyone was immediately reminded of the big bream massacre of 20 years ago. It soon became apparent, however, that this time a new record had been achieved, albeit a particularly sad one. Dead fish began to pile up in the calm waters between Koria and Myllykoski. A day later the full extent of the disaster was revealed when dead fish began to pop up to the surface from the riverbed.

## Sewer Pipes Responsible

At first, the dairy or hog farm at Koria were thought to be responsible, but when dead fish were found above Keltti, chief inspector Ilpo Kettunen of the Kymi Water District was convinced that they could not be held responsible. Now two sewer pipes have been found to be responsible, one of them belonging to the municipality of Kuusankoski and the other to the Kymi Company.

Judging from the bloody gills and things relating to the deaths of other fish, the city is hardly guilty of discharging pollutants into the river. Because of this, chief inspector Kettunen strongly suspects an industrial plant which could have released a quantity of acid or lye into the water. At this point, the Kymi Company denies that it is guilty, but has launched a thorough investigation.

## Explanation Today

A preliminary explanation of the Kymijoki catastrophe may be obtained Monday, when findings from automatic water-measuring stations and samples collected by hand during Pentecost are analyzed. There are such automatic stations at Keltti, Hirvivuolle and Karhula. These provide exact times, salt content and turbidity



which, according to Kettunen, will probably enable them to explain many of the causes of the disaster. The oxygen content of the river has proven to be normal.

Both the city of Kuusankoski and the Kymi Company will have to provide the water district with a precise accounting of their discharges for the week. The water district will send the results to the Water Authority, which will then decide on the possible institution of legal proceedings. The local fishing commission may also take the matter to court. These authorities have already indicated that they have been thinking along these lines.

#### Abundance of Fish

Aside from this catastrophe, an abundance of fish was revealed in Kymijoki. Three-kilogram ide amazed riverside residents with their size as did a huge hulk of an eel found above Keltti. Perch weighing over a kilogram apiece were not rare. Very few bream were found, although one that weighed over 3 kg was obtained. Even the experts were amazed that the pike were not affected by the pollutants. Only one small young pike was found dead.

Kymijoki was muddy brown Saturday morning when they began to expose it after the disaster. Ossi Marttila, who pulled the first batches of dead fish into his boat with a dip net, too said that the color of the water alone proved that something was out of the ordinary.

The flood of pollutants wrought havoc primarily between Kuusankoski and Kyylykoski. When it reached the lower course of the river, it began to break up and the pollutants started to lose their effect.

#### Kotka Gets Ready

To be safe, Kotka, which gets its drinking water from the river, filled all of its storage tanks to the brim before the spearhead of the flood reached the water-collection point at Langinkoski at 1800 hours on Sunday evening. For the rest of the evening the intake pipes were kept closed and the inspection went on until even later than that.

"At any rate, this once again demonstrated that Kotka must get its water from somewhere else than Kymijoki," water-maintenance chief Petteri Wilenius said.



The polluted river extended along Iylyjoki from Kuusankoski to Iylykonki.

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Date: 1968/11/10

# MINISTER WANTS RIKSDAG TO END CHEMICAL AGENTS IN FORESTS

Stockholm DAGENS NYHETER in Swedish 13 Jun 81 p 7

[Article by Lars Hellerstedt: "Minister of Agriculture Opposes Committee: Total Prohibition of Chemicals for Combatting Undergrowth in Forests"]

[Text] Total prohibition of chemical means of combatting undergrowth in forestry. Chemical substances such as phenoxy acids will only be permitted by authorization in remote and rugged areas. Minister of Agriculture Anders Dahlgren (Center Party) announced in an interview with TT [Swedish Central News Agency] that he will present such a bill to the fall session of the Riksdag.

By introducing a general prohibition against chemical agents in thinning undergrowth in the forests, Dahlgren is going against an almost unanimous report from a parliamentary committee chaired by Commissioner Arne Engstrom. Last fall it recommended that chemical agents should again be permitted in the forests. Only the Left Party Communists on the committee objected, and wanted a total prohibition.

"Spraying of undergrowth has caused great concern and irritation. I have had the opinion for a long time that the technique is unsuitable and that other methods should be developed," said Dahlgren.

"The fact that spraying is done over the forest in berry-picking time when people are present, and is directed against growing trees, are reasons enough for my position.

"My position is that there should be a prohibition in principle against fighting undergrowth by chemical means. In very sparse and remote areas with a shortage of manpower it may be possible, after close examination, to grant authorization to spray with chemicals," said Dahlgren.

## Authorization Fee

Since the report on combatting undergrowth was finished last fall it was planned that the government would present a bill concerning future combatting of undergrowth

during the spring session. But the work was delayed under the three-party government because of disagreement between ministers. But now Dahlgren will be ready in the fall with a bill which will be entirely different than expected.

In the forthcoming bill there may be a fee for spraying with authorization.

"Prohibition of spraying means going over to another forestry technique which will require more labor-intensive methods. That will create opportunities for jobs in sparsely populated areas. That means that forest energy will be better utilized and there will be more incentive to develop environmentally rich forests.

"In such forests there will be more hardwood trees. Chemical spraying strikes blindly, while mechanical clearing can allow the hardwood trees to remain," said Dahlgren.

It is still not clear whether authorization will be granted to spray from aircraft.

### Three Alternatives

The problem with the use of chemicals in forestry is now being investigated. This investigation, with Commissioner Arne Engstrom as committee chairman, has asked for more time, and Dahlgren has agreed to this.

To get better product control over chemical agents a bill will be presented in the fall. It is not yet in final form.

The report on combatting undergrowth recommended three alternatives last fall.

One alternative was that districts should get permission to exempt their areas from spraying and that the National Board of Forestry could prevent chemical use where manual clearing is more suitable.

The report recommended that procedure with unanimity among the four major parties.

But Dahlgren has chosen the alternative of total prohibition with stiff requirements for possible authorization.

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CSO: 5000/2139

STUDY EXAMINES COST OF CONTROLLING WATERS ACIDIFICATION

Stockholm DAGENS NYHETER in Swedish 10 Jun 81 p 9

[Article by Rolf Akerberg]

[Text] It will cost the government 200 million kronor annually to continue the acidification control of lakes and rivers in Sweden. Some 700,000 tons of crushed limestone will be needed each year to prevent these waters from dying.

This is according to a report submitted to the government by the Fishing Administration and the Environmental Protection Agency last Tuesday concerning 5 years of experimental work adding lime to lakes and rivers. The report also suggests an annual grant of 10 million kronor to try to save field and stream and ground water.

During a 5-year period in which tests have been made using lime, the government has spent 55 million kronor divided among 300 projects, most of them in Southern Sweden and Varmland.

But there are thousands of acid lakes in Sweden and of these--4,000 are considered gravely acidified. Another 3,000 lakes are expected to become acidic during the eighties.

All of these should be saved if the government grants the money requested.

If they are not saved, some 60 percent of Sweden's recreational fishing will be threatened.

"We expect the effects of lime to last about 5 years," said Bo Bengtsson in the Fishing Administration. "That is the optimum utilization of lime."

According to Bo Bengtsson, the positive physical-chemical effects measured are, among other things, that the water has been restored to the same condition it was prior to the acidification. The content of quicksilver, lead and cadmium has been reduced and the aluminum leakage in the ground, as a result of acidification, has been stopped.

The biological effects are also predominantly positive. There are more fish; a growing stock of salmon, trout and plaice has been observed in waters of national interest. The growth of algae has been reduced and--wherever lime is used on land--there is also less moss.

Jan Erling Larsson with the Environmental Protection Agency said that the pollution from Sweden does not play an important role in the overall situation; it mainly produces local effects.

The most important thing is to get the industrial nations in Europe to reduce their pollution.

However, it is also important that the agricultural sector in Sweden--which now uses more acid fertilizer than ever before--increase its use of lime.

"Farmers do not use enough lime to reduce acidification of the soil," Jan Erling Larsson explained.

With respect to the cost of adding lime to our lakes, the Fishing Administration and the Environmental Protection Agency in their report to the government said that those who directly benefit from it should help pay for it.

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